Remarks

This paper is in response to the Office Action mailed January 25, 2007, with reference to the above identified application.

Claims 1 to 17 are pending in this application.

Claims 1, 8 and 17 have been amended to clarify the relationship between the alarm indications. Thus, it is now clear that the second alarm indication, which indicates a fault before the sub-network (an incoming fault), is different from the second alarm indication, which indicates a fault within the sub-network (an internal fault).

Further, it is now clear that the first or second alarm indication is replaced with a fault indication at the point where the path exits the sub-network, the fault indication being different from the first and second alarm identifications.

Claims 1 to 17 stand rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant's admitted prior art and in view of Johnson et al. (US 2004/0120706).

The invention relates to a topology in which a path between a source and a sink traverses more than one network, i.e. a network and a sub-network. Edges of the sub-network are provided with tandem connection monitoring arrangements for monitoring errors which are introduced in the sub-network.

In a conventional tandem connection monitoring system, as shown in Figures 1 and 2 of the patent application, four bits of an N1 byte are used to indicate an incoming error count or an incoming fault ("a first alarm indication"), as determined at the first edge of the sub-network. An incoming error count is determined by comparing parity bytes with the data. An incoming fault is determined by the presence of a path AIS (alarm indication signal), which is represented as binary 1s in the data and the pointers. The information in the N1 byte may then be used at the second edge of the sub-network to determine which of the networks is responsible for the accumulated errors.

A fault (as opposed to a mere error) occurring within the sub-network is detected by the sub-network node adjacent to the fault. In the conventional system, a path AIS is inserted by this sub-network node to indicate that a fault has been detected.

The sub-network node which detects the fault also sends a path alarm signal to the network management center.

A problem with the conventional system is that all of the following sub-network nodes in the path also receive the path AIS and therefore also send path alarm signals to the network management center. This propagation of path alarm signals complicates the process of identifying the location of a fault, and therefore delays a restoration procedure.

The invention addresses this problem by providing a novel approach for handling faults within the sub-network. According to the invention, if a fault is detected by a sub-network node, the node may send a path alarm signal to the network management center, but it does not insert a path AIS. Instead, valid pointers are retained and the four bits of the N1 byte used for tandem connection monitoring are set to a unique value indicating an internal fault ("a second alarm indication"). In the absence of a path AIS, the following sub-network nodes do not generate path alarm signals, and the location of the fault within the sub-network can be more easily identified by the network management center.

At the second edge of the sub-network, the first or second alarm indication, representing an incoming or internal fault respectively, is replaced with a conventional path AIS ("a fault indication"). Thus, the operation of downstream components in the network is not affected by the invention.

As partially acknowledged by the Examiner in relation to claims 1, 8 and 17, the conventional system shown in Figures 1 and 2 does not provide a second alarm indication, different to the first alarm indication and different to the fault indication, when a fault is detected in the sub-network. Nor does the conventional system replace the second alarm indication, representing incoming and internal faults respectively, with a common fault indication

different to the first and second alarm indications where the path exits the sub-network.

The Examiner contends that it would have been obvious for a person of ordinary skill in the art to have incorporated the teachings of Johnson et al. with the admitted prior art so as to arrive at the invention. However, applicant respectfully disagrees.

Johnson et al. discloses an optical network in which each node comprises a hard fault monitor (see Figure 7). When the fault monitor detects a fault, end nodes of a number of channels are identified, and an alarm signal sent to the end nodes is conditioned to a lower severity (paragraph [0086]).

Johnson et al. is of no relevance to tandem connection monitoring of a sub-network, to which the invention relates. Furthermore, there is nothing in either the admitted prior art or Johnson et al. to suggest to that the optical network shown in Figure 6 of Johnson et al. could be implemented in the sub-network of the admitted prior art.

Even if the person of ordinary skill had been motivated to incorporate the teachings of Johnson et al. with the admitted prior art, he would not have been able to arrive at the invention. In particular, the prior art fails to provide any suggestion that different alarm indications could be used within a sub-network to indicate incoming and internal faults, and that these indications could be replaced with a common fault identification, different from the alarm indications, at the edge of the sub-network. It is these features that enable faults to be indicated in the sub-network without causing multiple path alarm signals, but at the same time avoiding the need for modification of network elements downstream of the sub-network.

It is therefore respectfully submitted that independent claims 1, 8 and 17 are patentably distinguished from the cited prior art.

With regard to claim 15, the Examiner has acknowledged that the conventional system shown in Figures 1 and 2 does not provide a header having a tandem connection monitoring byte in which error counter bits can be

set to a third value representing the second alarm signal which, as described above, indicates a fault internal to the sub-network.

The Examiner contends that it would have been obvious for a person of ordinary skill in the art to have incorporated the teachings of Johnson et al. with the admitted prior art so as to arrive at the invention. However, applicant respectfully disagrees.

As mentioned above, Johnson et al. is of no relevance to tandem connection monitoring of a sub-network, to which the invention relates. For this reason, it cannot suggest a value for a tandem connection monitoring byte.

Furthermore, there is nothing in either the admitted prior art or Johnson et al. to suggest that values for a tandem connection monitoring byte could distinguish between faults external and internal to a sub-network (the first and second alarm signals).

It is therefore respectfully submitted that independent claims 15 is patentably distinguished from the cited prior art.

Detailed arguments are not presented in respect of the dependent claims, since the relevant objections are no longer considered pertinent. Nevertheless, the arguments of the Examiner are not accepted.

It is submitted that this application is now in condition for allowance. Such action is respectfully solicited.

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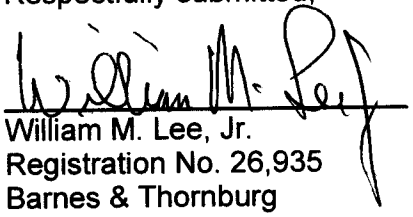
Respectfully submitted,



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